Impact of peanut consumption in the LEAP Study: Feasibility, growth, and nutrition

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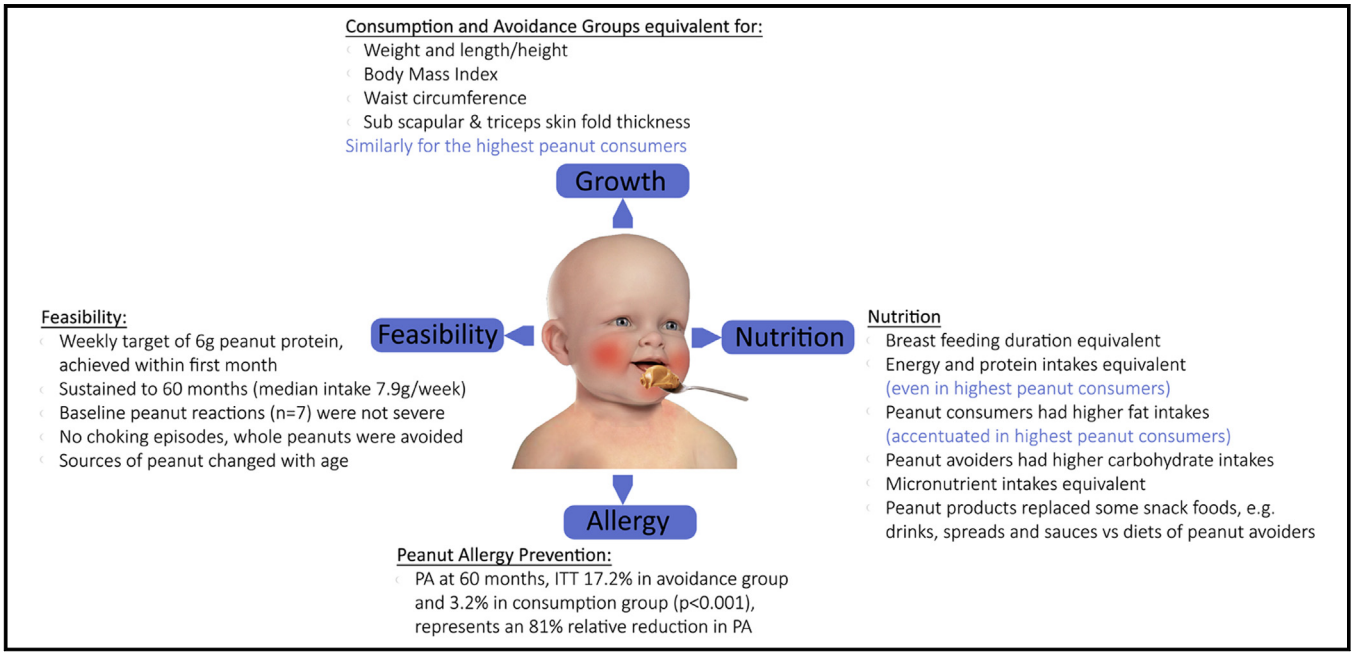
GRAPHICAL ABSTRACT



Background: Early introduction of peanut is an effective strategy to prevent peanut allergy in high-risk infants; however, feasibility and effects on growth and nutritional intake are unknown.

Objective: We sought to evaluate the feasibility of introducing peanut in infancy and explore effects on growth and nutritional intake up to age 60 months.

Methods: In the Learning Early About Peanut Allergy trial, 640 atopic infants aged 4 to 11 months were randomly assigned to consume (6 g peanut protein per week) or avoid peanut until age 60 months. Peanut consumption and early feeding practices were assessed by questionnaire. Dietary intake was evaluated with prospective food diaries. Anthropometric measurements were taken at all study visits.

Results: Peanut was successfully introduced and consumed until 60 months, with median peanut protein intake of 7.5 g/wk (interquartile range, 6.0-9.0 g/wk) in the consumption group compared with 0 g in the avoidance group. Introduction of peanut in breast-feeding infants did not affect the duration of breast-feeding. There were no differences in anthropometric measurements or energy intakes between groups at any visits. Regular peanut consumption led to differences in dietary intakes. Consumers had higher intakes of fat and avoiders had higher carbohydrate intakes; differences were greatest at the upper quartiles of peanut consumption. Protein intakes remained consistent between groups.

Conclusions: Introduction of peanut proved feasible in infants at high risk of peanut allergy and did not affect the duration of breast-feeding nor impact negatively on growth or nutrition. Energy balance was achieved in both groups through variations in intakes from fat and carbohydrate while protein homeostasis was maintained. (J Allergy Clin Immunol 2016;138:1108-18.)

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Key words: *Food allergy, allergy prevention, peanut, infant feeding, breast-feeding, nutrition, growth, prospective food diary, protein homeostasis*

Abbreviations used
BMI: Body mass index
DRV: Dietary reference value
FFQ: Food frequency questionnaire
LEAP: Learning Early About Peanut Allergy
LRNI: Lower reference nutrient intake
%TE: Percentage of total energy
RNI: Reference nutrient intake
UK: United Kingdom
WHO: World Health Organization

We recently reported that early introduction of dietary peanut results in a marked reduction in the development of peanut allergy in high-risk infants.[1] The Learning Early About Peanut Allergy (LEAP) study intervention disagrees with current World Health Organization (WHO) advice, which recommends that infants should be exclusively breast-fed for the first 6 months of life (no other food or water).[2] Similar to the dietary practices in the United States and Australia, the mean age of introduction of peanut-containing foods in the United Kingdom (UK) is 36 months and only around 8% to 10% of infants eat peanut before age 1 year.[3-5]

Many professional allergy societies now recommend the LEAP study intervention of early peanut introduction in infancy followed by ongoing regular consumption until age 60 months for the prevention of peanut allergy in high-risk infants.[6,7] This advice may in time be extended to encompass all children regardless of their risk of peanut allergy. Although regular consumption of peanut from an early age appears to be an effective strategy for the prevention of peanut allergy in high-risk infants as well as in infants recruited from a general population, there could be unexpected consequences for growth and nutrition.[1,8] Anecdotally, no adverse health consequences have been associated with this practice in countries such as Israel, where peanut is regularly consumed by infants and young children. Epidemiological studies describe beneficial health effects of regular nut consumption in children and adolescents including a lower body mass index (BMI), a higher healthy eating index, and higher intakes of micronutrients.[9,10] Furthermore, there is a long tradition of using peanut as the mainstay of nutritional fortification programs in developing countries and even in the United States as part of the supplemental nutrition program for Women, Infants and Children.[11] Despite these dietary practices, intervention studies involving regular consumption of peanut or similar energy-dense foods in early childhood are lacking in the literature.

The LEAP intervention recommended an intake of 6 g peanut protein per week, equivalent to 3 teaspoons of peanut butter, on the basis of the upper quartile of intake observed in infants in Israel (7.1 g peanut protein per month).[3] It is unknown whether this dietary recommendation is challenging to incorporate into the diet of the infant, or will lead to an imbalanced diet if eaten throughout childhood.

The objectives of this study were to evaluate the feasibility of introduction of peanut in infancy and the effects of regular ongoing consumption on growth, nutrition, and diet of infants with atopy enrolled onto a randomized controlled trial. Using data from the LEAP study, we compared infants randomized to consumption or avoidance of peanut during the first 5 years of life.

Graphical abstract image illustration: Jarrod Nielsen, Medical Media Kits.

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